

## **AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

### **LISTING OF CLAIMS:**

1. (currently amended): A user authentication method for checking whether a user is qualified for using a service provided through a network, comprising:

~~a step of registration of user authentication information, to register~~registering a numerical calculation method, designated by said user and being specific to said user, as ~~said~~ user authentication information together with user identification information corresponding to said user; and

~~a step of judging to perform user authentication, wherein when said~~transmitting said user identification information ~~is transmitted~~ from said user through said network to a service providing site; ~~and;~~

transmitting an arbitrary numeric value ~~is transmitted~~ from said service providing site through said network to said user;;

a user obtaining a first calculation result by a determination of whether a first calculation  
~~result, which is obtained by said user using said arbitrary numeric value in said registered~~  
numerical calculation method; ~~and;~~

~~is transmitted~~transmitting said first calculation result from said user through said network to said service providing site; ~~and~~

determining whether said first calculation result equals a second calculation result which is obtained by said service providing site by applying said arbitrary numeric value to said registered numerical calculation method;

wherein, when said first calculation result equals said second calculation result, said user is authorized.

2. (currently amended) A user authentication method for checking whether a user is qualified for using a service provided through a network, comprising:

~~a step of registration of user authentication information, to register~~registering a numerical calculation method, designated by said user through said network and being specific to said user, as ~~said~~ user authentication information together with user identification information corresponding to said user; ~~and~~

~~a step of judging to perform user authentication, wherein when said~~transmitting said user identification information ~~is transmitted~~ from said user through said network to a service providing site; ~~and;~~

transmitting an arbitrary numeric value ~~is transmitted~~ from said service providing site through said network to said user;

~~a first calculation result corresponding to said arbitrary numeric value is obtained by said user~~a user obtaining a first calculation result by using said registered numerical calculation method; ~~and~~

~~is transmitted~~transmitting said first calculation result from said user through said network to said service providing site; and

~~a determination of~~determining whether said first calculation result equals a second calculation result, which is obtained by said service providing site by applying said arbitrary numeric value to said registered numerical calculation method;

wherein, when said first calculation result equals said second calculation result, said user is authorized.

3. (previously presented) A network system comprising:

one or a plurality of user terminals by which a user transmits a numerical calculation method, being specific to said user, together with user identification information corresponding to said user, through a network to a service providing site, and said one or plurality of user terminals transmits a first calculation result obtained by applying a given numeric value to said numerical calculation method through said network to said service providing site; and

one or a plurality of service providing sites to register said numerical calculation method together with said user identification information corresponding to said user, to transmit an arbitrary numeric value through said network to said user terminal when said user identification information is transmitted from said user terminal through said network and to judge, when said first calculation result corresponding to said arbitrary numeric value is transmitted from said user terminal through said network, whether said first calculation result equals a second calculation result which is obtained by said one or plurality of service providing sites by applying said

arbitrary numeric value to said registered numerical calculation method, to perform said user authentication.

4. (original) The network system according to Claim 3, wherein said user terminal has a function of displaying said arbitrary numeric value transmitted from said service providing site.

5. (original) The network system according to Claim 3, wherein said user terminal has a function of outputting, by voice, said arbitrary numeric value transmitted from said service providing site.

6. (original) The network system according to Claim 3, wherein said user terminal is made up of a portable cellular phone or a personal digital assistant, having a function of displaying said arbitrary numeric value transmitted from said service providing site.

7. (original) The network system according to Claim 3, wherein said user terminal is made up of a portable cellular phone or a personal digital assistant, having a function of outputting, by voice, said arbitrary numeric value transmitted from said service providing site.

8. (original) The network system according to Claim 3, wherein said first calculation result is input by voice of said user to said user terminal and is transmitted through said network

to said service providing site and wherein said service providing site has a function of performing voice recognition of said first calculation result.

9. (currently amended) A ~~storage~~computer-readable medium storing a control program to have a computer carry out a user authentication method for checking whether a user is qualified for using a service provided through a network, said method comprising:

~~a step of registration of user authentication information, to register~~registering a numerical calculation method, designated by said user and being specific to said user, as ~~said~~ user authentication information together with user identification information corresponding to said user; ~~and~~

~~a step of judging to perform user authentication, wherein when~~transmitting said user identification information ~~is transmitted~~ from said user through said network to a service providing site; ~~and;~~

transmitting an arbitrary numeric value ~~is transmitted~~ from said service providing site through said network to said user; <sub>i</sub>

~~a determination of whether a first calculation result, which is obtained by said user~~a user obtaining a first calculation result by using said arbitrary numeric value in said registered numerical calculation method; ~~and;~~

~~is transmitted~~transmitting said first calculation result from said user through said network to said service providing site; and

determining whether said first calculation result equals a second calculation result which is obtained by said service providing site by applying said arbitrary numeric value to said registered numerical calculation method,

wherein, when said first calculation result equals said second calculation result, said user is authorized.

10. (currently amended) A ~~storage~~computer-readable medium storing a control program to have a computer carry out a user authentication method for checking whether a user is qualified for using a service provided through a network, said method comprising:

~~a step of registration of user authentication information, to register~~registering a numerical calculation method, designated by said user through said network and being specific to said user, ~~as said~~ user authentication information together with user identification information corresponding to said user; ~~and~~

~~a step of judging to perform user authentication, wherein when~~transmitting said user identification information ~~is transmitted~~ from said user through said network to a service providing site; ~~and;~~

transmitting an arbitrary numeric value ~~is transmitted~~ from said service providing site through said network to said user;

~~a first calculation result corresponding to said arbitrary numeric value is obtained by said user~~a user obtaining a first calculation result by using said registered numerical calculation method ~~and;~~

~~is transmitted~~transmitting said first calculation result from said user through said network to said service providing site;<sub>i</sub> and

~~a determination of~~determining whether said first calculation result equals a second calculation result, which is obtained by said service providing site by applying said arbitrary numeric value to said registered numerical calculation method,<sub>i</sub>

wherein, when said first calculation result equals said second calculation result, said user is authorized.

11. (currently amended)      A ~~storage~~computer- readable medium storing a control program to have a computer carry out a network system comprising:

one or a plurality of user terminals by which a user transmits a numerical calculation method, being specific to said user, together with user identification information corresponding to said user, through a network to a service providing site, and said one or plurality of user terminals transmits a first calculation result obtained by applying a given numeric value to said numerical calculation method through said network to said service providing site; and

one or a plurality of service providing sites to register said numerical calculation method together with said user identification information corresponding to said user, to transmit an arbitrary numeric value through said network to said user terminal when said user identification information is transmitted from said user terminal through said network and to judge, when said first calculation result corresponding to said arbitrary numeric value is transmitted from said user terminal through said network, whether said first calculation result equals a second calculation

result which is obtained by said one or plurality of service providing sites by applying said arbitrary numeric value to said registered numerical calculation method, to perform said user authentication.

12. (previously presented) The user authentication method according to claim 1, wherein during user authentication information registration, said service providing site supplies said user with a plurality of numerical calculation methods and said user designates one of said plurality of numerical calculation methods to be the registered numerical calculation method.

13. (previously presented) The user authentication method according to claim 2, wherein during user authentication information registration, said service providing site supplies said user with a plurality of numerical calculation methods and said user designates one of said plurality of numerical calculation methods to be the registered numerical calculation method.

14. (currently amended) The ~~storage~~ computer-readable medium according to claim 9, wherein during user authentication information registration, said service providing site supplies said user with a plurality of numerical calculation methods and said user designates one of said plurality of numerical calculation methods to be the registered numerical calculation method.

15. (currently amended) The ~~storage~~ computer-readable medium according to claim 10, wherein during user authentication information registration, said service providing site supplies



said user with a plurality of numerical calculation methods and said user designates one of said plurality of numerical calculation methods to be the registered numerical calculation method.

16. (previously presented) The user authentication method according to claim 1, wherein said registered numerical calculation method is a mathematical expression that is solved by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.

17. (previously presented) The user authentication method according to claim 2, wherein said registered numerical calculation method is a mathematical expression that is solved by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.

18. (previously presented) The network system according to claim 3, wherein said numerical calculation method and said registered numerical calculation method are a mathematical expression that is solved by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.

19. (currently amended) The ~~storage~~ computer-readable medium according to claim 9, wherein said registered numerical calculation method is a mathematical expression that is solved

by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.

20. (currently amended) The ~~storage~~-computer-readable medium according to claim 10, wherein said registered numerical calculation method is a mathematical expression that is solved by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.

21. (currently amended) The ~~storage~~-computer-readable medium according to claim 11, wherein said numerical calculation method and said registered numerical calculation method are a mathematical expression that is solved by said user and said service providing site, using said arbitrary numeric value provided by said service providing site.